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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/654,542	09/02/2003	Bulent M. Basol	NT-260-US	3972

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EXAMINER

MORGAN, EILEEN P

ART UNIT	PAPER NUMBER
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3723

DATE MAILED: 08/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/654,542

Applicant(s)

BASOL ET AL.

Examiner

Eileen P. Morgan

Art Unit

3723

— The MAILING DATE of this communication appears on the cover sheet with the correspondence address —
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 September 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-13, 17, 20, 27 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, what does 'induce the base' mean? Is the pressure applied to the process surface or to the wafer? Same for claims 11 & 20. Claim 7, what does 'within the cavity' refer to? 'the predetermined travel' lacks antecedent basis. What is a predetermined travel limit range? Cl. 17, 'the step of relative motion' is unclear. Cl. 27, How does the head 'move contacting surfaces along an axis'? How many surfaces are there? What does this mean?

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1,3-7,10-21,23,25-27 are rejected under 35 U.S.C. 102(e) as being anticipated by Chen et al.-6,857,945.

Chen discloses a carrier head and method of polishing a wafer with a carrier head comprising a carrier housing (102), a base (104) for holding workpiece and movable with respect to housing, a pressure member (108) between the base (104) and housing (102) for applying a predetermined pressure to wafer against the process surface of a polishing pad, wherein the pressure member is a compressed fluid controlled by a pneumatic system (122), wherein the housing includes a cavity (120) and the base includes a shaft (136) configured to slide within the cavity, wherein the pressure member attaches the base and the carrier housing via flexible diaphragm (126), wherein the housing includes a stop member (lower shoulder of 122) and the shaft includes a limiting member (138) to mate with stop member to limit travel, wherein the pressure member is controlled for applying any desired pressure to wafer against the pad.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 2, 22 rejected under 35 U.S.C. 103(a) as being unpatentable over Chen in view of Kajiwara et al.-2002/0115397.

Chen discloses a carrier head and method of polishing a wafer with a carrier head comprising a carrier housing (102), a base (104) for holding workpiece and movable with respect to housing, a pressure member (108) between the base (104) and housing (102) for applying a predetermined pressure to wafer against the process surface of a polishing pad, wherein the pressure member is a compressed fluid controlled by a pneumatic system (122), wherein the housing includes a cavity (120) and the base includes a shaft (136) configured to slide within the cavity, wherein the pressure member attaches the base and the carrier housing via flexible diaphragm (126), wherein the housing includes a stop member (lower shoulder of 122) and the shaft includes a limiting member (138) to mate with stop member to limit travel, wherein the pressure member is controlled for applying any desired pressure to wafer against the pad. Chen does not disclose using a spring as a pressure member. However, Kajiwara teaches a polishing device having a wafer carrier head for applying force to the wafer against a polishing pad wherein the force is applied via a spring (232,238) or via pneumatic pressure [0080]. Kajiwara teaches that pressure can be applied to the backside of a wafer for polishing by either a spring or pneumatic pressure, which he deem as functional equivalents. Therefore, it would have been obvious to one of ordinary skill in the art at time invention was made to substitute the pneumatic pressure of Chen for force springs, as taught by Kajiwara, since these are well known functional equivalents and the choice of either would be within the level of one having ordinary skill.

Claim 9 rejected under 35 U.S.C. 103(a) as being unpatentable over Chen in view of Shendon-2001/0044268.

Chen discloses a carrier head and method of polishing a wafer with a carrier head comprising a carrier housing (102), a base (104) for holding workpiece and movable with respect to housing, a pressure member (108) between the base (104) and housing (102) for applying a predetermined pressure to wafer against the process surface of a polishing pad, wherein the pressure member is a compressed fluid controlled by a pneumatic system (122), wherein the housing includes a cavity (120) and the base includes a shaft (136) configured to slide within the cavity, wherein the pressure member attaches the base and the carrier housing via flexible diaphragm (126), wherein the housing includes a stop member (lower shoulder of 122) and the shaft includes a limiting member (138) to mate with stop member to limit travel, wherein the pressure member is controlled for applying any desired pressure to wafer against the pad. Chen does not disclose the cavity having bearings for the shaft. However, Shendon teaches a carrier head for polishing a wafer with a polishing pad wherein the carrier head has a cavity with a shaft (64) and bearings (77) for shaft to rotate within cavity. Therefore, it would have been obvious to one of ordinary skill in the art at time invention was made to provide Chen with bearings in the cavity in order to enhance shaft rotation within cavity by reducing friction.

Claims 8, 24 rejected under 35 U.S.C. 103(a) as being unpatentable over Chen, alone.


Chen discloses a carrier head and method of polishing a wafer with a carrier head comprising a carrier housing (102), a base (104) for holding workpiece and movable with respect to housing, a pressure member (108) between the base (104) and housing (102) for applying a predetermined pressure to wafer against the process surface of a polishing pad, wherein the pressure member is a compressed fluid controlled by a pneumatic system (122), wherein the housing includes a cavity (120) and the base includes a shaft (136) configured to slide within the cavity, wherein the pressure member attaches the base and the carrier housing via flexible diaphragm (126), wherein the housing includes a stop member (lower shoulder of 122) and the shaft includes a limiting member (138) to mate with stop member to limit travel, wherein the pressure member is controlled for applying any desired pressure to wafer against the pad. Chen does not disclose the polishing pad having a spring constant greater than the pressure member. However, the spring constant of the pad would have been an obvious design choice dependent on machining parameters and desired process of wafer.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eileen P. Morgan whose telephone number is 571.272.4488. The examiner can normally be reached on Monday-Thursday, 7am-3:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Hail can be reached on 571.272.4485. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

EM
June 25, 2006



Eileen P. Morgan
Primary Examiner